

REMARKS

By the present Amendment, claims 1-9 are cancelled and claims 10-33 are added. This leaves claims 10-33 pending in the application, with claims 10 and 33 being independent.

Substitute Specification

The specification is revised to eliminate grammatical and idiomatic errors in the originally presented specification. The number and nature of the changes made in the specification would render it difficult to consider the case and to arrange the papers for printing or copying. Thus, the substitute specification will facilitate processing of the application. The substitute specification includes no “new matter”. Pursuant to M.P.E.P. § 608.01(q), voluntarily filed, substitute specifications under these circumstances should normally be accepted. A marked-up copy of the original specification is appended hereto.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claim 4 stands rejected under 35 U.S.C. §112, first paragraph, on the ground that the specification does not provide adequate information to enable the invention to be made and used in connection with graphite powder and activated charcoal. The specification is only found to be enabling for various fibers and filaments.

As used in this application, the word “thread” is not limited to usual monofilament and multifilament threads. Thus, such term includes items such as graphite powder and activated charcoal as recited in the claims. In this connection, page 5, line 34, specifically refers to filaments of “graphite powder”, “activated charcoal” and “ones constructed of powder”. Obtaining such threads of graphite powder and activated charcoal are known. For example, U.S.

Patent No. 7,695,026 col. 10, lines 35-40, refers to functional powder carried in a carrier such as synthetic fibers, where activated charcoal is specifically referenced as one of the powders. No evidence is supplied that such threads are not known such that the rejection fails to comply with the requirements of M.P.E.P. §2164.04. Thus, the application adequately supports all claimed subject matter as required by 35 U.S.C. §112.

Rejections Under 35 U.S.C. §103

Claim 10 covers a method of producing membranes comprising constructing a tubular body 10 having a longitudinal axis from a plurality of threads such that some of the threads are tied substantially firmly together along fillet-shaped connecting lines 14 with continuous longitudinal threads parallel to the longitudinal axis. Between the fillet-shaped connecting lines, at least some of the threads are formed as planar transverse connections 16 between mutually adjacent ones of the fillet-shaped connecting lines. A predefinable membrane material is applied to the tubular body.

By forming the membranes in this manner, optimal tubular membranes can be obtained at a high production rate and at low cost. Moreover, these tubular membranes will not suffer undesired stretching effects. The production method is particularly enhanced by membranes being produced continuously, and thus, inexpensively.

Claims 1-9 stand rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 5,034,129 to Ten Hove in view of U.S. Patent No. 6,454,942 to Shintani. The Ten Hove patent is cited for disclosing a process of making a membrane including placing a woven or knitted tube 11 over a mandrel 8 and then another non-woven, woven or knitted tube 12 over the tube 11. An external tube 12 is allegedly welded if it is non-woven but that the weld is not

necessary (col. 2, lines 11-15). The membrane thicknesses are allegedly disclosed in col. 4, lines 10-29. The Shintani patent is cited for a tricot knitted fabric as a membrane support. In support of the rejection, it is alleged that it would be obvious to provide the Shintani tricot weave tubes for the Ten Hove tubes 11 and 12. Regarding the dependent claims, the tricot weave is interpreted as a knit weave produced by a crocheting device with hook needles with filet lines that are less permeable than the space between them and where the tricot material is polyester or similar polymer. The angle between the adjacent transverse fibers is allegedly in the claimed range shown in Fig. 2. Even if not disclosed, it is alleged that such angle is obvious.

Claims 1-9 also stand rejected under 35 U.S.C. §103 as being anticipated by U.S. Patent No. 5,359,735 to Stockwell or obvious in view of the Shintani. The Stockwell patent is cited for a method of making a coating of breathable material over a circular knitted fabric where the knitted fabric is a tricot weave (col. 3, lines 64-69). For the details of the tricot weave, apparently the Shintani patent is cited.

While the Ten Hove patent discloses a membrane assembly, admittedly, no details are provided therein regarding the knitted tubes 11 and 12. Particularly, neither of the Ten Hove knitted tubes are disclosed as being constructed of a tubular body having the specific thread arrangement recited in claim 10. Such deficiencies are not cured by the Shintani patent.

The Shintani patent discloses a liquid separation membrane module that does not appear to show it formed into a tubular body. Though Figs. 4 and 5 illustrate a spiral wound type liquid separation module using the channel material, that embodiment does not provide a tubular body in which the threads are constructed, as recited in the method of claim 10. Specifically, claim 10 recites that the fillet-shaped connecting lines have continuous longitudinal threads parallel to the

longitudinal axis. No continuous longitudinal threads are provided in the knotted fillet lines alleged to be provided in the Shintani tricot fabric. Additionally, claim 10 recites forming at least some of the threads as planar transverse connections. The transverse connections allegedly present in the Shintani fabric are not shown to be planar.

Longitudinal tensile stretches arising during filtration are taken up by the continuous longitudinal threads along the fillet-shaped connecting lines. The stresses at the periphery are taken up safely by the transverse threads by way of the planar transverse connections. These features are clearly not disclosed or rendered obvious by the Ten Hove and Shintani patents considered individually or in any obvious combination there.

The rejection based on the Stockwell patent in view of the Shintani patent suffers the same deficiencies. Admittedly, the Stockwell patent does not disclose the details of the tricot weave necessary to meet the claim limitations. Such deficiencies are not provided by the Shintani patent for the same reasons advanced above relative to the combination of the Ten Hove and the Shintani patents. Those reasons are not repeated to avoid burdening of the record.

Since the Shintani patent does not have a stable connection between transverse threads and longitudinal threads at the connecting points forming the connecting lines, the Shintani knitted structure is flexible, leading to undesirable stretching. Accordingly, claim 10 is patentably distinguishable over the Ten Hove, Shintani and Stockwell patents considered individually or in any obvious combination thereof. None of the other cited patents cure these deficiencies in the patents applied in the rejections.

Claims 11-22, being dependent upon claim 10, are also allowable for the above reasons.

Moreover, these dependent claims recite additional features further distinguishing them over the cited patents.

Claim 11 is further distinguishable by the specific crocheting steps. Such steps are not shown to be disclosed or obvious from the cited patents.

Claim 12 is further distinguishable by the crocheting with passages and the connecting lines formed to be liquid tight or with a low flow rate. Those features are not shown to be disclosed or rendered obvious.

Claim 13 is further distinguishable by the specific materials recited.

Claim 14 is further distinguishable by the specific materials recited.

Claims 15 and 16 are further distinguishable by the specific threads recited there that are not shown to be disclosed or rendered obvious by the cited patents.

Claims 17 and 18 are further distinguishable by the specific angles between the threads of the transverse connection. Such angles are not shown to be disclosed or rendered obvious by the cited patents.

Claims 19 and 20 are further distinguishable by the numbers of sides. These numbers of sides are not disclosed or rendered obvious by the cited patents.

Claims 21 and 22 are further distinguishable by the specific membrane materials recited therein.

Claim 23 is further distinguishable over the Ten Hove, Shintani and Stockwell patents for the same advanced above. Such reasons are not repeated to avoid burdening of the record.

Claims 24-33 are further distinguishable for the same reasons advanced above relative to claims 12, 13, 14, 15, 16, 17, 18, 19, 20 and 22, respectively, which reasons are not repeated to avoid burdening the record.

Accordingly, claims 10-33 are allowable. Prompt and favorable action is solicited.

Respectfully submitted,



Mark S. Bicks
Reg. No. 28,770

Roylance, Abrams, Berdo & Goodman, LLP
1300 19th Street, NW, Suite 600
Washington, DC 20036
(202) 659-9076

Dated: October 13, 2010